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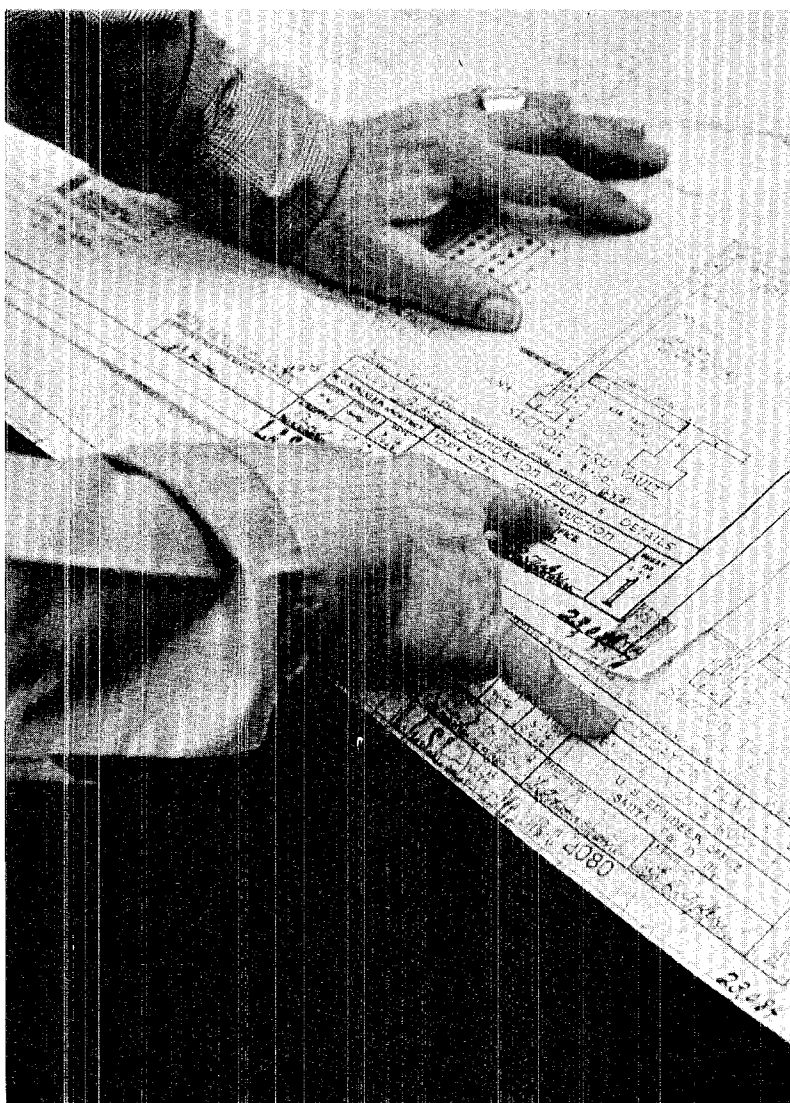
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COVER:

The Atom's cover photo this month was taken by Bill Jack Rodgers through the framework of D-8's 105-mm camera. Don James and Ed Martinez are preparing an engineering drawing for reproduction. The camera and other equipment makes it possible for D-8 to offer microfilming service within the Laboratory on a large scale. Information in more detail can be gained by reading the story that begins on page one.

A Microfilm System



The light-blue lines of a diazo copy of an engineer's drawing, right, are almost lost in some cases on a smudged background. At left is a clear and contrasty reproduction of the diazo print, enlarged from a microfilm negative, obviously an improvement over the original.

*that makes
reproductions
look better
than
original copy*

"The question isn't, how close can we come; it's, how much better can we do," said D-8 Group Leader Bob Crook, as he compared two copies of an engineer's drawing derived from different processes.

One was what is commonly known as a blue-line diazo-print. Some of its light blue lines were almost lost on a smudged background. The other copy was a reproduction of the first, a clear and contrasty rendition with black lines on white paper, obviously an improvement over the original. The reproduction was made to the same scale as the original, enlarged from a microfilm negative.

Crook was pointing out some of the advantages of microfilming records rather than filing and storing the original paperwork. He noted that microfilmed records are of such quality that the original paperwork can be destroyed. The Los Alamos Scientific Laboratory's system was devised to meet military standards and recommendations of the Atomic Energy Commission, Crook said, "so we can exchange microfilm

continued on next page

Microfilm . . .

continued from preceding page

with anyone in any organization with reasonable assurance that we can control resolution, density and shelf-life for archival purposes." The group leader said the usable life of microfilm is from 50 to 100 years.

Because of the capability of microfilm to miniaturize documents, users of the system experience a vast reduction in necessary storage and file space. In addition, the system provides an easier and more efficient method of finding desired documentation, and money can be saved in mailing. Because of the reduced weight and size of microfilm, less postage is required, and the need for mailing tubes and large envelopes and boxes is decreased.

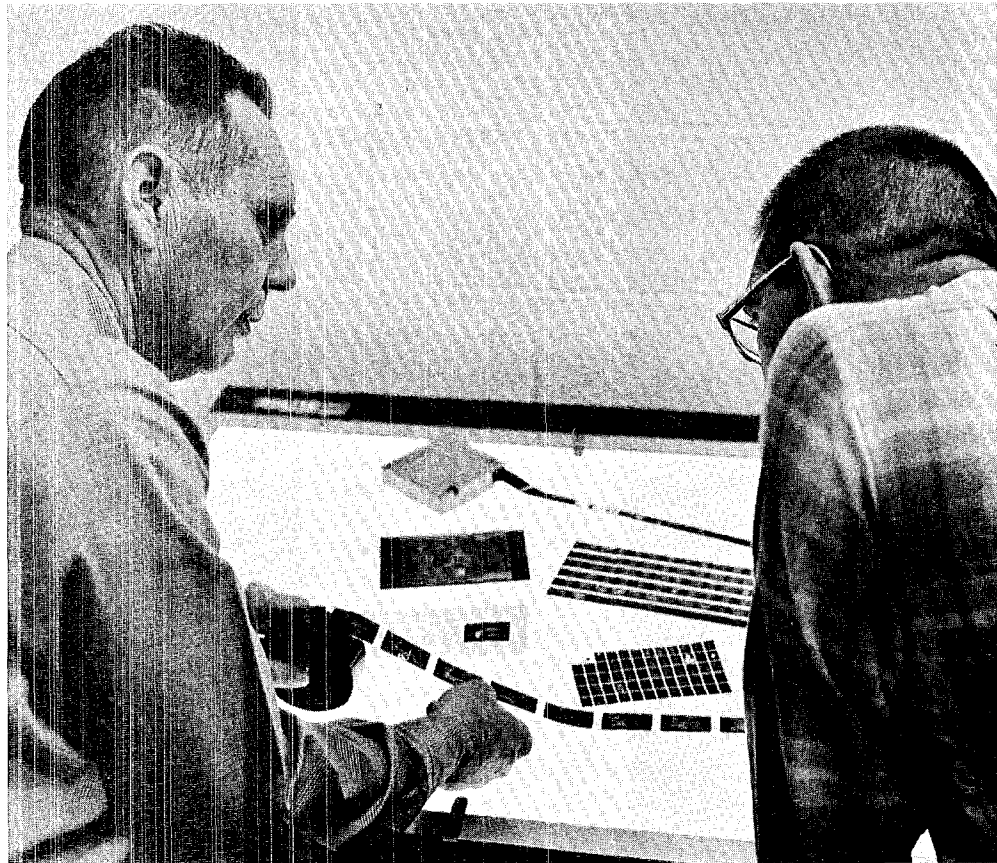
There are some drawbacks. Crook said, in some cases, there are certain legibility standards that should be met so that copy can be adequately reduced without loss of resolution and clarity. Also, there is a deficiency in the availability of blow-back equipment (equipment used to transfer and enlarge a microfilm image on paper) at the present time.

Crook said that his group has had very limited microfilm capabilities for several years and that some Laboratory organizations have their own, but for the first time, services are being made available for all organizations within the LASL complex on a large scale.

"Several groups are coming into the system," Crook said. The conversion of their records to microfilm, however, is not accomplished overnight. It requires considerable preplanning and coordination for several reasons.

First of all there are four sizes of microfilm available so that a system can be tailored to fit the needs of any organization at the Laboratory. The determining factors in selecting a format that will best serve the needs of an applicant are the type and use of material to be microfilmed.

For example, the 105mm and 35mm negatives are considered to be



Bob Crook, D-8 group leader and Don Randolph, who heads the microfilm section, show the various microfilm formats available to Laboratory organizations. Crook is holding a roll of 35mm film. Above his right hand is an aperture card in which one frame of 35mm film is mounted. Above that is a 105mm negative and a 16mm cartridge. The two sizes of microfiche are shown at right.

primarily "engineering tools," because of the quality in detail when "hard-copy" enlargements are made to the size of the original, although these formats are available to others when their needs include top-quality reproduction.

The 35mm negative requires mounting on an aperture card, which is similar to a keypunch card except for an aperture in which the negative is secured. It is a good choice for the customer whose requirements include mass distribution because it is presently the most universally accepted format among AEC installations, the Department of Defense and industrial agencies, Crook said. The cards are machine-processable at D-8, using modified equipment.

The 16mm format is best suited for correspondence, technical reports and other copy that is generally originated on 8½ x 11-inch paper, Crook said. On 16mm roll-film, 3,000 pages can be placed in a 1 x 4 x 4-inch cartridge and equipped with a visual retrieval system. By comparison, the microfilmed material contained in one cartridge is equal to half of a file drawer of paper copy.

Microfiche, the smallest format available, comes in two sizes. On one of the microfiche formats, approximately 4 x 6-inches, 56 pages of copy can be recorded, including a reference code on the top portion of the film sheet. Without the code, the sheet will hold 70 pages of copy. The second format was designed by

the Engineering department for its use. It is approximately 5 x 8-inches in size and 66 images plus reference code can be placed on one sheet. Crook said the microfilm system is an excellent medium for scanning to locate specific material.

In addition to selecting the size of microfilm to be used, organizations must arrange for their own reader equipment and a printing capability to reproduce the image on microfilm to paper.

The using organization is also responsible for the origination of "source data sheets" which provide the necessary information for coding the microfilm. In addition to coordinating a workable code system with D-8, some internal instruction by the using organization is usually necessary.

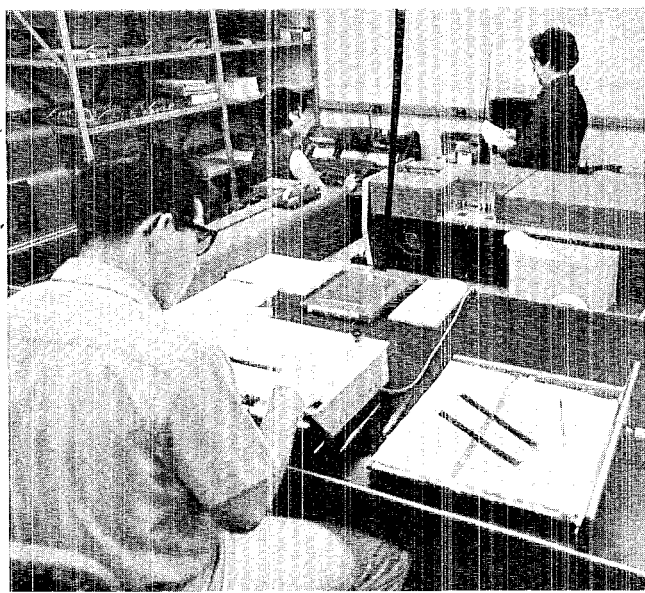
Crook said, on request, D-8 will maintain a "master deck" for using organizations—a reference system by which desired material can be found easily.

The Laboratory's microfilm system was designed primarily by Crook and S. E. Russo, ENG-3 group leader. ENG-3, the records group of the Engineering department, had fallen heir to an estimated 35,000 to 50,000 drawings from American Car and Foundry, Inc. when it was phased out of the Rover Program last year and approximately 10,000 others from an AEC storage center. Russo said the Engineering department generates from 4,000 to 5,000 drawings a year and, at the time, had 65,000 to 70,000 of its own stored in ENG-3's 20 x 80-foot vault.

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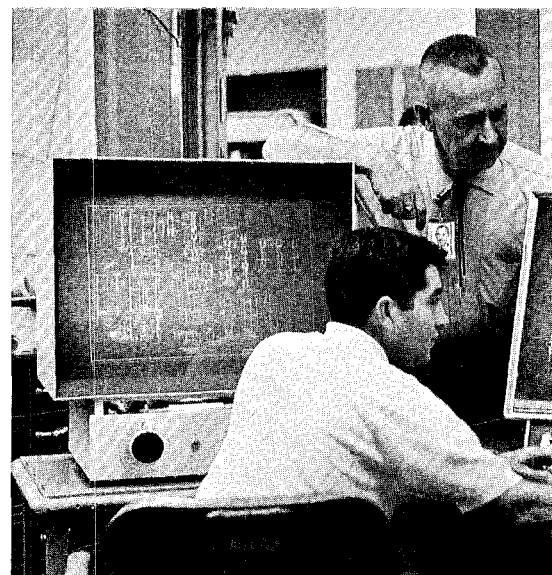
Martinez and James smooth out an engineering drawing on the copy-board below the 105mm camera.

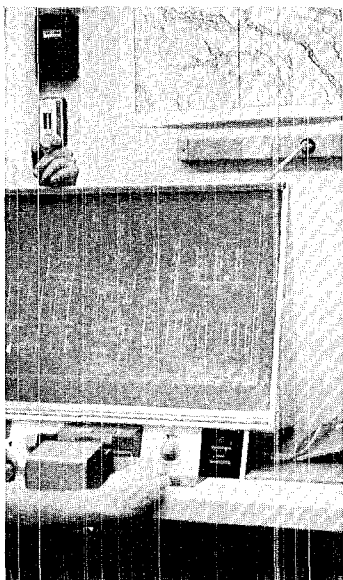


Preparing microfiche at D-8 for the Engineering department is Floyd Archuleta. At left in the background, Janet McKee prepares keypunch cards for the 35mm system and Molly Mollohan works with 35mm mounting equipment.



S. E. Russo, ENG-3 group leader, and Bill Williams, section leader, examine one of 1,600 105mm negatives contained in one drawer. The drawer holds the equivalent of between five and six drawers like the one pulled out at right. (Bottom): Most of the filing cabinets will be taken out of the ENG-3 vault when their contents have been microfilmed. Boxes in foreground and other material on cabinets is a temporary condition resulting from the conversion program. (Right): ENG-3's Bennie Montoya, left, and John Sizer compare the same drawing projected from different microfilm formats. The drawing is shown on a microfiche reader at left and on a 35mm reader-printer at right.





Microfilm . . .

continued from page 3

He said the ACFI and AEC inheritances took an estimated 10 years of space from the vault.

Russo and Crook discussed the possibility of implementing a microfilm system for the Engineering department that could be readily adapted to the needs of other organizations at the Laboratory. They looked at many systems being used at other AEC installations and industrial agencies, and talked with suppliers and manufacturers. They designed and proposed a system to D division and Engineering department heads, who then proposed the system to the Director's office.

Their proposal was approved and preparations were made for the purchase and installation of necessary microfilm equipment. By disposing of other equipment that would be made obsolete by the new system, any requirement for additional space was eliminated.

Don Randolph was named to head the new Microfilm section. Two D-8 personnel were retrained and reassigned and six others were hired to fill out the staff to nine.

The section has been operational for nearly a year, but the microfilm

program has, until recently, been relatively closed to most Laboratory organizations because of a heavy commitment to ENG-3—that of microfilming the more than 100,000 Engineering department, ACFI and AEC drawings—under a tentative Jan. 1969 deadline.

Crook said that much help with data processing and keypunching was received from AO-4, because project demands far surpassed D-8 capabilities. The project called for three copies of each drawing on 105 mm film; up to six on 35mm; and five on microfiche. One copy of each 105mm negative is to be kept in ENG-3's working file. Another is to be sent to the AEC emergency relocation center and the third to another security location. The 35-mm aperture cards are interchangeable with other installations and agencies, and microfiche copies provide a scanning medium for engineering and other personnel.

Crook said that reproduction on 105mm and 35mm has been essentially completed and can now be maintained on a day-to-day basis as new drawings are generated by the Engineering department. He estimated that about one-third of the microfiche requirement has been fulfilled and said that a major effort is being devoted to completing this phase of the project.

ENG-3 personnel are concurrently inventorying drawings, to be sure that they have all been microfilmed, and performing a quality inspection of each 105mm negative received from D-8. When these tasks are successfully completed, ENG-3 will be able to destroy the original drawings. Russo said that correspondence, presently contained in many filing cabinets, design calculations, special reports, shop drawings, specifications, and catalog data now contained in binders will be converted to 16mm roll-film. Complete conversion to the microfilm system, which will open up half of the large vault for future use, is expected by 1971. "We'll be able to return from \$15,000 to \$18,000 worth of filing cabinets to Supply and Property," said the group leader.

The microfiche process has been used extensively by the Library, mainly for technical reports. For convenience, D-8 maintains a master deck of the unclassified portion. Mrs. Helen Redman, D-2 group leader, estimated that 80 per cent of the incoming reports from the AEC and National Aeronautics and Space Administration (NASA) are on microfiche. Two copies of each report are generally received from the AEC. One is sent to D-8 and the other is retained by the Library. NASA generally sends one copy which is retained by the Library, but is sent to D-8 for reproduction when the report is requested. Using the Library's copy as an original, D-8 makes a reproduction for the requestor, and another for the master deck, and then sends the original back to the Library.

Mrs. Redman said that prior to the time of the Laboratory's microfilming capability, one microfiche copy of each report was being received from the AEC and NASA. The copy was circulated and its return was requested. Now, microfiche copies are circulated for permanent use. The system has eliminated the need for making out and cancelling receipts and refiling the material.

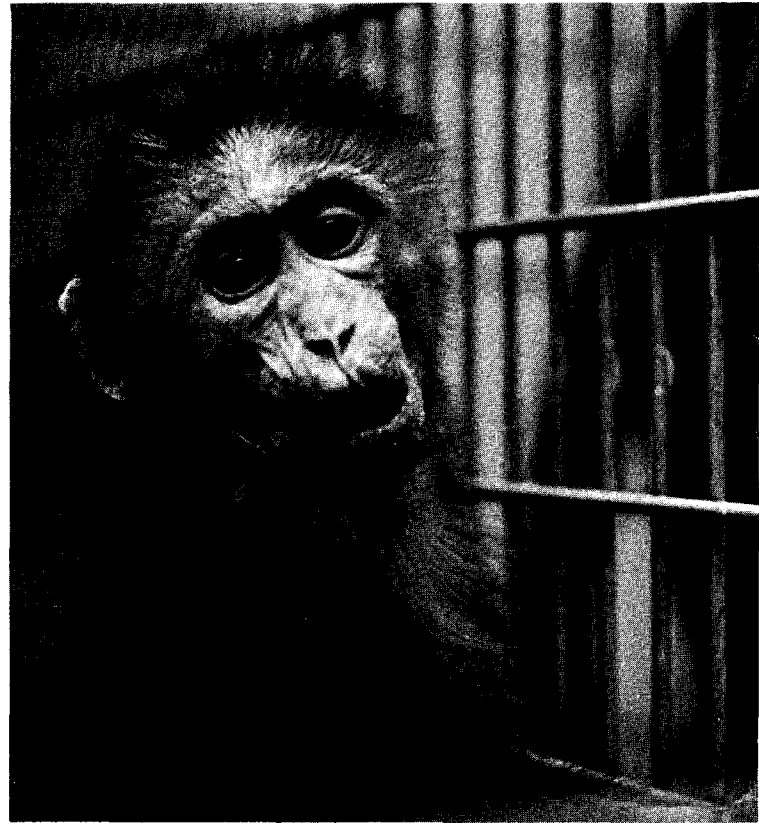
Crook pointed out there is some spinoff from the microfilm system. D-8 has been making pictures for the AEC Badge office from 35mm negatives, mounted on aperture cards, since July. The Badge office uses a 35mm camera to photograph Laboratory employees for security badges. Once each week the film is delivered to D-8 where it is processed, mounted on aperture cards and filed. On request from the AEC D-8 retrieves the desired aperture card and makes the required number of photographs.

The microfilm system is relatively inexpensive when compared to the savings it represents. Including all overhead it costs about 15 cents to produce an image-filled sheet of microfiche; one cent per frame on 16mm roll-film; and about 20 cents for one 35mm negative, aperture card and corresponding keypunch card.

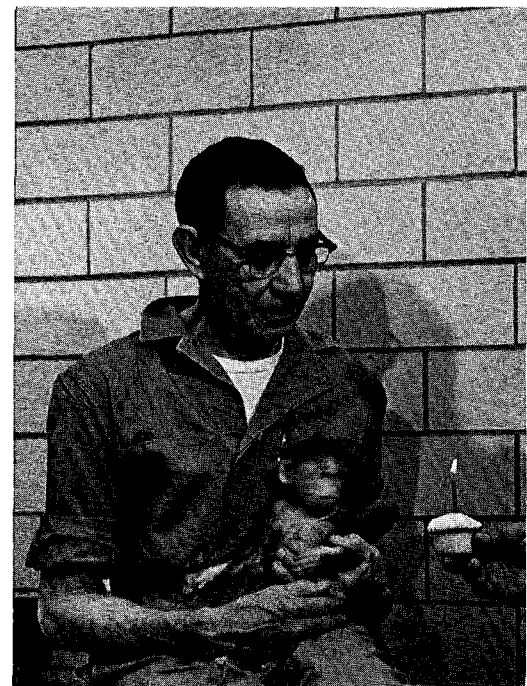
Large doses of radiation should have made Nancy, a monkey, sterile, or they should have caused her death or mutations in her offspring. But she defied science in all three ways by giving birth to a healthy, normal, female baby named Chancy. On December 7, Chancy was one year old and, like all "kids", she loves

a
birthday
party

"Here comes the cake!"



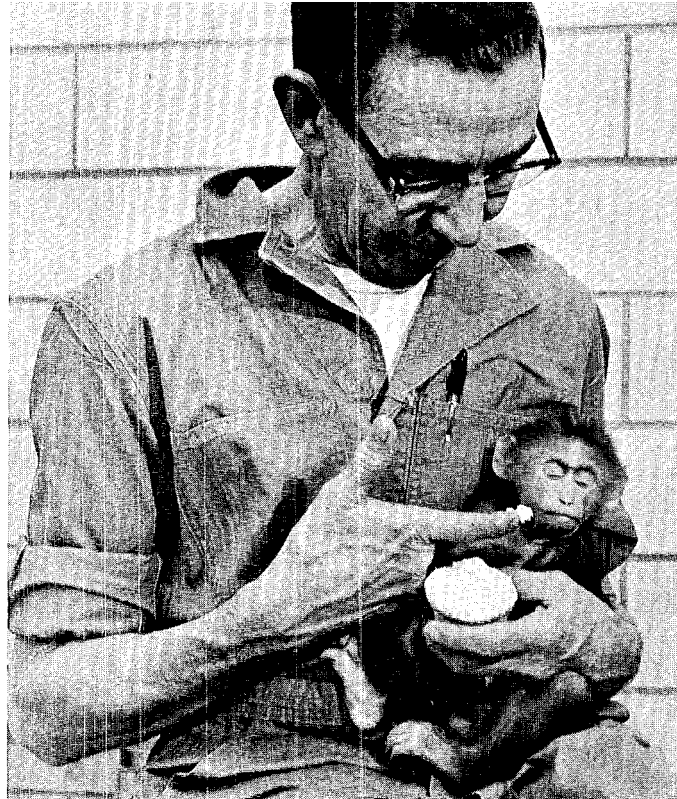
"I'm trying to blow it out!" Steve Cordova, left, and Ernesto A. Vigil, are both members of Group H-4.



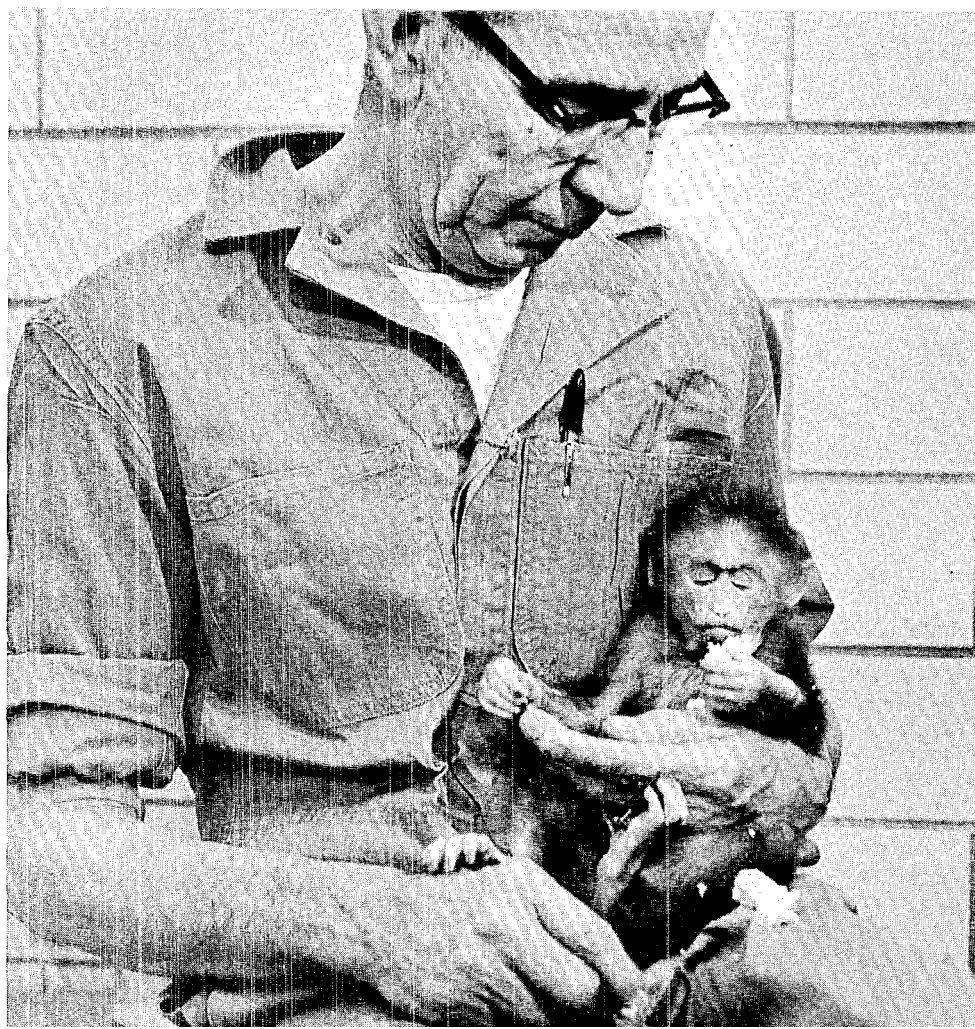


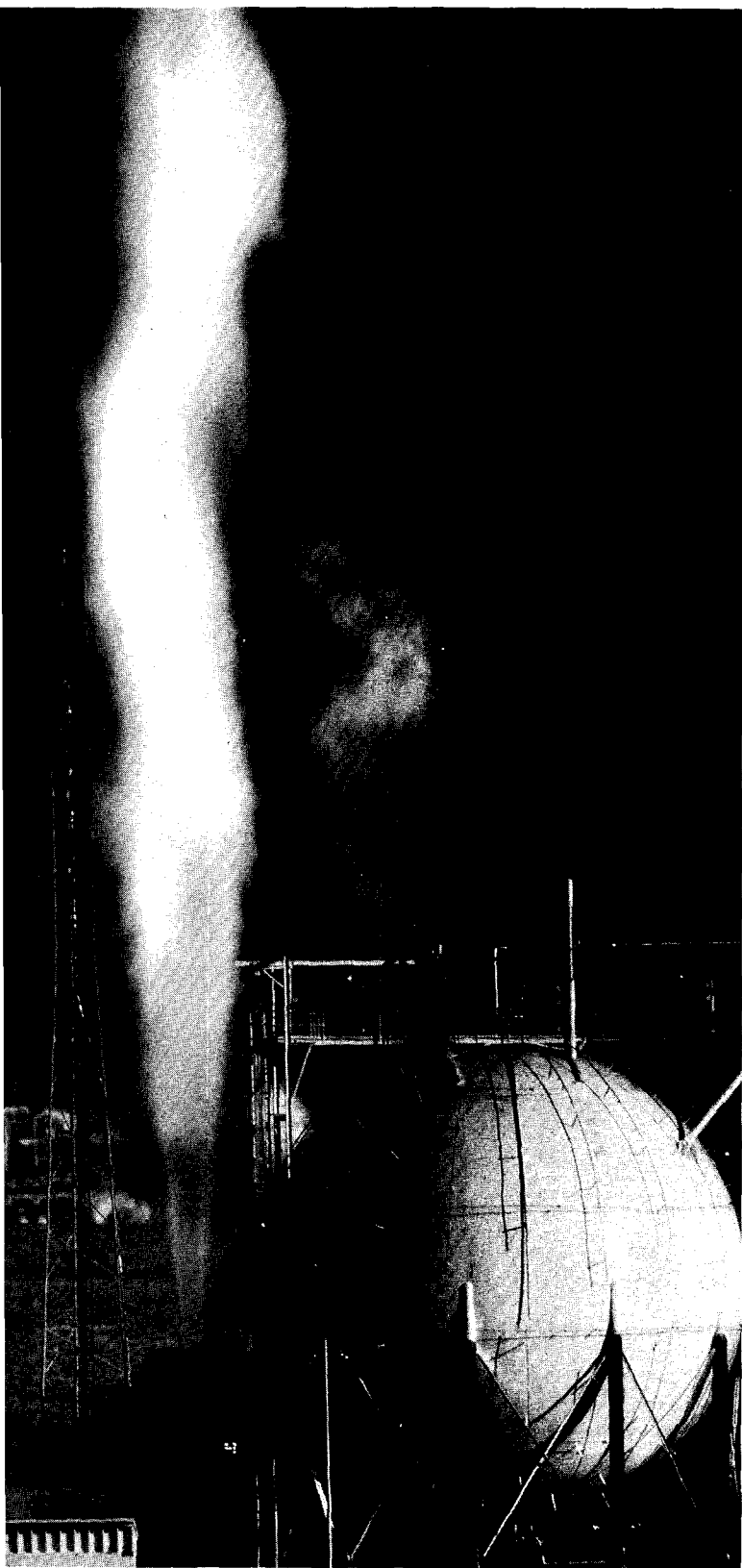
"Forget the icing buster; just
gimme the cake!"

"Invite the kids over."



"Not bad; not bad at all."





Infrared film contrasts the plume from Pewee I against the sky. The reactor was undergoing a test to demonstrate its basic capabilities when this D-8 photograph was taken.

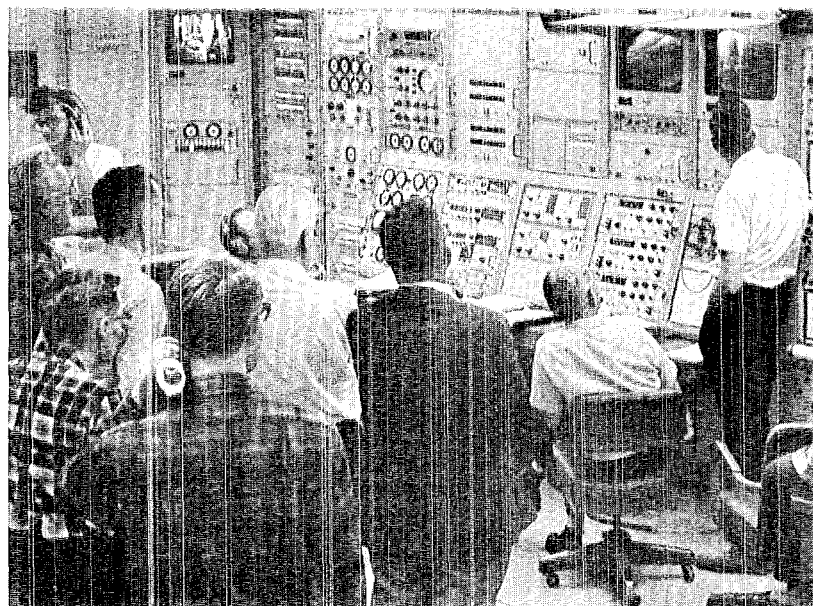
Pewee I Is Tested

Pewee I, the first in a new series of reactors, designed and developed at the Los Alamos Scientific Laboratory, was successfully tested at the Nuclear Rocket Development Station in Nevada Dec. 4.

The reactor is a unique testbed for fuel elements and support hardware that can possibly be included in a flyable space vehicle.

Pewee was never intended to fly, but is expected to make a significant contribution to reactors that will. By subjecting fuel elements to the same operating conditions as a flyable reactor, but in a smaller system, scientists can make realistic evaluations of their performance at a savings in money, time and effort.

The December test was to demonstrate the basic capability of Pewee and provide data on several experimental fuel elements designed by the Laboratory and by the Westinghouse Astronuclear



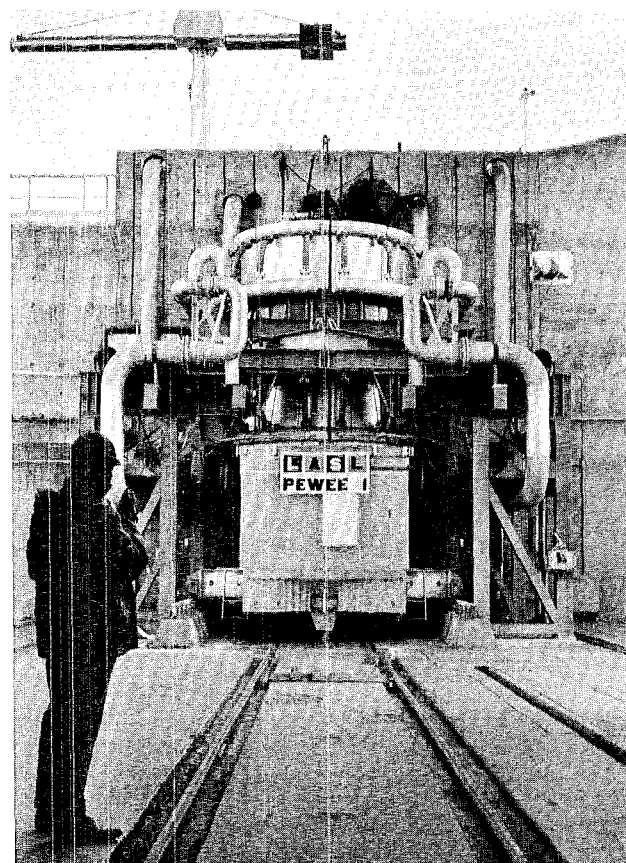
Three hours after the power run of Pewee I Dec. 4, PUB-1 Photographer Bill Jack Rodgers put on a protective suit and accompanied D-8 personnel to a camera bunker north of Test Cell C to recover film which had been exposed remotely during the test. From the bunker, Rodgers took the picture, top, of the highly radioactive test cell. By that time Pewee I had been enclosed in the "shed," left of the dewars. (Left): LASL officials take a post-run view of the reactor on control room monitors. (Bottom): Pad Manager Don Lawrence, J-9, uses a portable radio to communicate with the control room from Test Cell C before the test. The shield, originally built for the Phoebus 1B, was adapted to Pewee I.

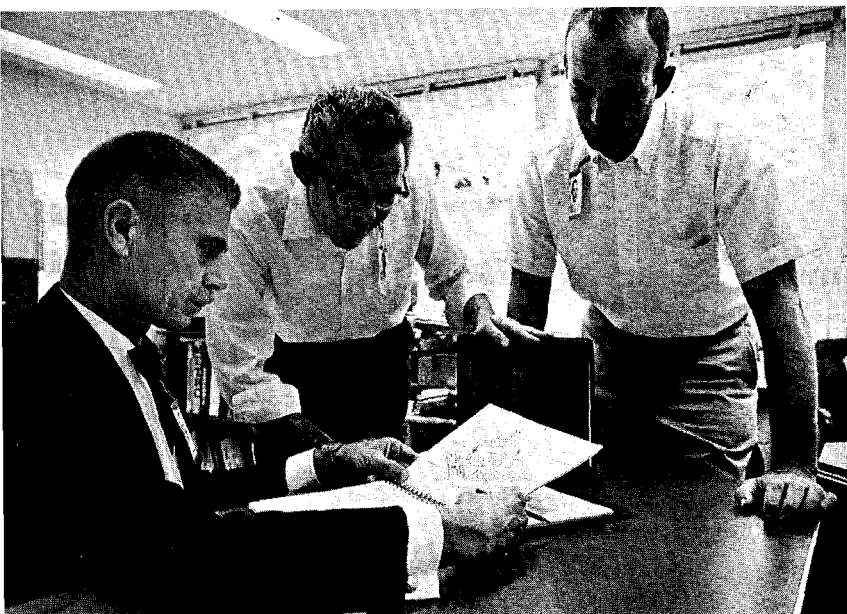
Laboratory, subcontractor to Aerojet-General Corporation on the NERVA reactor program. NERVA is the acronym for Nuclear Engine for Rocket Vehicle Application.

The testing of Pewee follows, by about six months, the successful ground-test of Phoebus 2A, the most powerful nuclear reactor ever developed for Project Rover, America's program to develop a nuclear propelled rocket capable of interplanetary travel.

Pewee, which was operated at significant power levels for 90 minutes, achieved an operating temperature of 4,600°R, the highest yet in the nuclear rocket program. For more than 40 minutes it produced more than 500 megawatts of power.

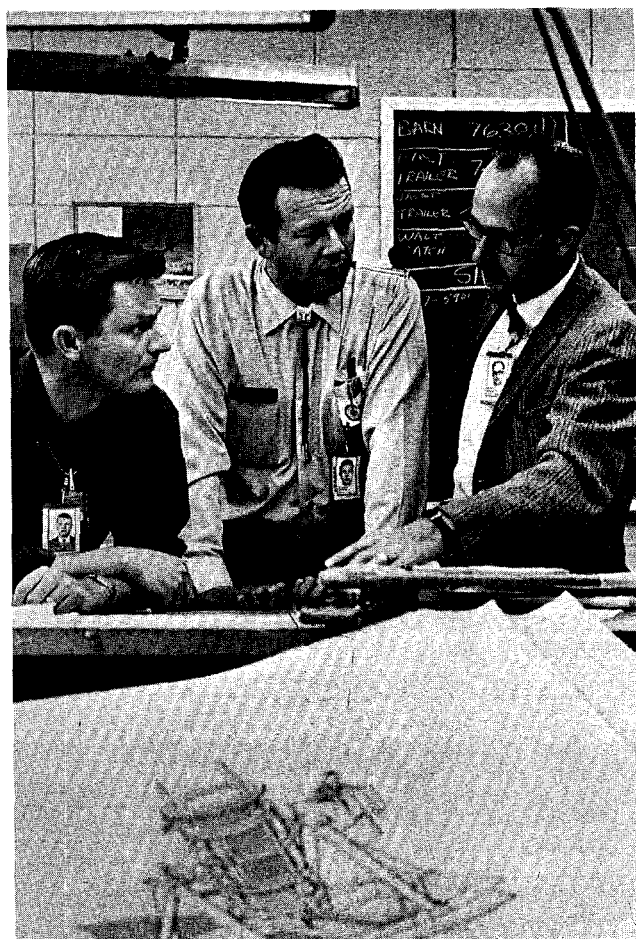
This was the second power run for Pewee. It was tested for 16 minutes Nov. 21 at partial power to determine operating characteristics (See "Pewee, pgs. 1-5, The Atom, June 1968). ✱





John Gerber, John Savage and Eric Foster, all members of ENG-6, review manuals they have written in connection with assembly and disassembly of the Phoebus 2A.

ENG-6 Group Leader Robert Hendron, right, talks with Staff Members Ray Miller, left, and Richard Hemphill about a design problem.



*Two Engineers and a fiction
writer put their heads
together to write*

Step-by-Step Instructions

*on how to use special
tooling in assembling and
disassembling Rover reactors*

Writing manuals is a relatively new experience for ENG-6 personnel, but is necessarily one of their tasks since the manuals are step-by-step instructions on how to assemble and disassemble Rover reactors using tooling designed by them.

Essentially it is the responsibility of three men. Two of them, John Gerber and Eric Foster, are engineers. The third, John Savage, is a fiction writer and former member of Group PUB-1. They have been at it for about a year and a half.

Prior to June of 1967, design and fabrication of precision tooling and preparation of manuals was done by a commercial firm. When it ceased operations, however, Project Rover officials at the Los Alamos Scientific Laboratory began looking around for other sources. ENG-6 was tabbed for the design of assembly and disassembly equipment, supervision of fabrication, which is still done commercially but by several firms throughout the country, and writing the manuals of instruction.

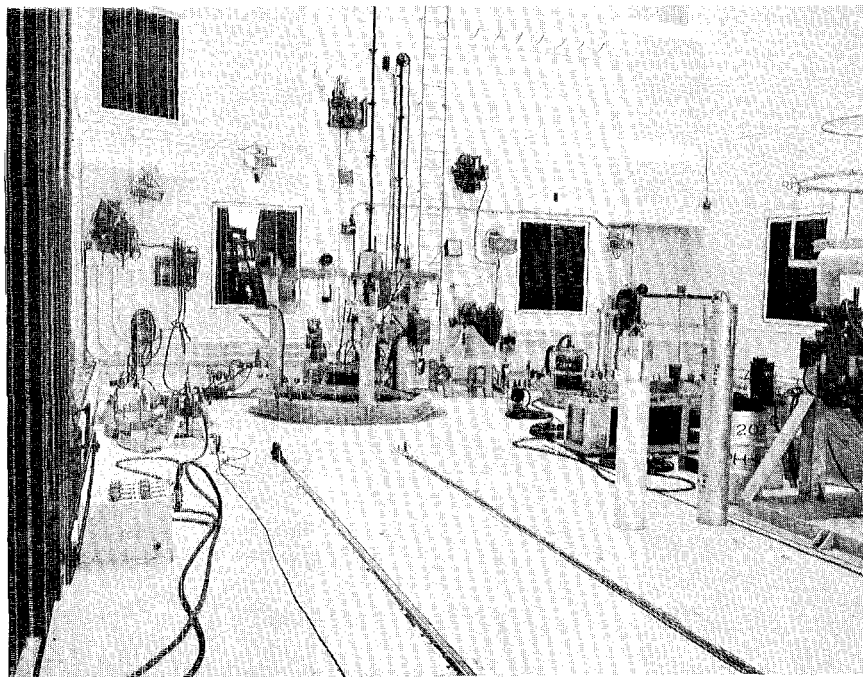
The tools used to assemble and disassemble a reactor are much more complex than those used for gen-

eral construction, especially those used in disassembly following a reactor test. In disassembly the reactor is untouched by human hands. All work is done in a hot cell using mechanical manipulators, controlled by trained technicians from behind a protective radiation shield. In front of them are the manuals prepared by ENG-6 which tell, step by step, how to take the reactor apart, which tools to use and how to use them. Such tooling could include a cradle that cants and turns the reactor core into a position where technicians can view certain parts through the thick windows of the hot cell and mechanically guide and operate tools in the process of disassembly. The wrench or screwdriver is an almost unbelievable complex piece of machinery.

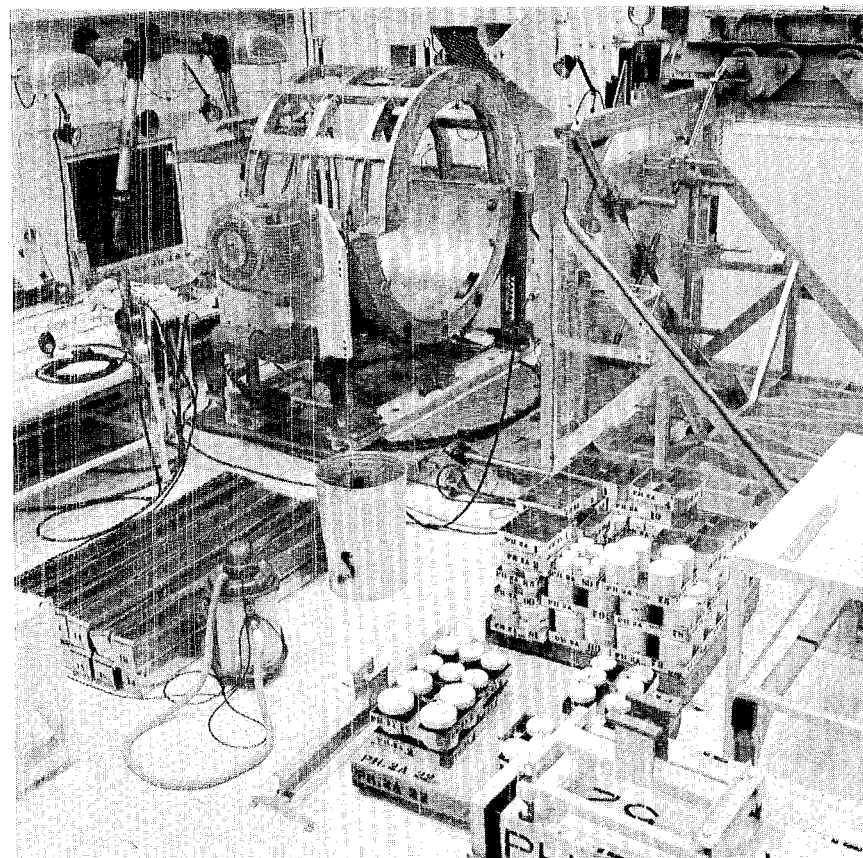
The first manuals written by the three men were for the assembly, disassembly and postmortem of Phoebus 2A which was tested at full power in June of this year. The latest one, containing instructions for disassembly, was for Pewee 1 which was tested at the Nevada Test Site last month.

Gerber noted that design work generally begins as soon as preliminary drawings of a reactor are available from N division which is responsible for nuclear propulsion research at the Laboratory. Through close coordination with N-division group leaders, the reactor engineer, J-9 which conducts disassembly, and the Engineering department whose draftsmen provide illustrations for the manuals, the necessary tooling is designed and the manuals written.

To accomplish both tasks, ENG-6 personnel become intimately acquainted with all reactor parts. During the preliminary stages, Gerber said, changes in reactor design frequently occur which have an effect on the design of tooling and assembly and disassembly procedures. When reactor design is firm, tooling is fabricated and manuals are printed. It takes about three months to prepare a manual, including publication, he said. ☞



When the Phoebus 2A had been tested, a complex variety of disassembly equipment awaited the reactor in the lower bay of the R-MAD building at the Nevada Test Site as shown in these D-8 photos. The equipment was designed by ENG-6, which was also responsible for writing the manual of instructions on how to use it.



Reviewing Civil Defense publications are Robert Y. Porton (center), director of the Los Alamos County CD organization and PUB-2 group leader; John Schroer, deputy director and employee of the AEC's Los Alamos area office; and Mary Sue Wooten, executive secretary and member of PUB-2. In the background is the Science Museum and Exhibit Hall's topographic map of the local area and, at right, a photograph of a nuclear detonation.

Los Alamos—City With a Top-Notch Civil Defense Program

By Bill Richmond

An effective Civil Defense program is like an insurance policy—one you hope is never used.

But if it is needed, it's good to know it's there, says Robert Y. Porton, director of the Los Alamos County Civil Defense organization. And Los Alamos has one of—if not THE—top CD plans and organizations in the United States.

A civil defense plan, although it was not known by that name then, has been a part of Los Alamos since the Laboratory was started in 1943. During the days of World War II, when Los Alamos was essentially a military post, there were emergency alert plans, an air raid system, blackout procedures and other typical military defensive measures.

In July, 1944, a memorandum was circulated from the commanding officer asking for names of civilians who might be placed in charge of key areas in the event of an enemy attack.

This drew a wry response from George B. Kistiakowsky: "Your memorandum of 14 July and the enclosure have been read with attention. Since I do not have under my jurisdiction one or more buildings, but merely a few nooks and crannies where the staff is tragically crowded, I cannot appoint even one person for the duties outlined in

your memorandum. Could I, personally, be given a machine gun or, at least, a pistol to play with when the alarm sounds?"

Prior to the A-bomb there were plans to evacuate the technical areas, but none to evacuate the town. Likewise, there were no provisions for shelters. After World War II, when it was recognized that radiological hazards could be great, protective clothing and respirators were stored in certain key areas. Also, a disaster plan and alarm system was prepared and became effective in November, 1948. Additional Civil Defense procedures "limped along" and in 1954 it was decided to hold a full-scale evacuation exercise involving both the Laboratory and the community. This was accomplished on June 14 of that year and nearly 9,000 persons left town by the posted evacuation routes, without a serious incident. This has been cited by many as the start of full community-wide participation in Civil Defense as it involved, for the first time, all elements at all levels.

The 1950's were notable for two points in Civil Defense at Los Alamos which have since changed: public apathy and evacuation. Many people did not want to be bothered with evacuation and held the view, prevalent throughout the nation, that "it can't happen here."

However, in July, 1961, President John F. Ken-



nedy, in a nationwide Civil Defense message, changed the pattern from evacuation to fallout shelters.

This was a turning point at Los Alamos and within a few days Civil Defense became of prime concern to all. A committee was formed to survey buildings in the technical areas and the community for possible use as fallout shelters. These shelters were to provide protection against fallout but not against a direct nuclear attack on Los Alamos. The Hill was not considered then—or now—to be a major target of an enemy nuclear attack.

Another survey, to place people in shelters nearest their work area and to uncover persons with certain skills that would be needed in shelter living and afterwards, was also conducted.

A much-discussed topic in the community at this time was the need for food for the shelters and to keep people alive after emerging from the shelters. It was decided to conduct a house-to-house canvass for funds to purchase survival foods.

Very few people felt this drive would be successful. To begin with, the annual Community Chest drive had just concluded and had fallen short of its goal. In addition, there was no way of knowing just how concerned the general public was about Civil Defense measures.

However, in just two weeks time, nearly \$40,000 was raised! This was enough to feed the town's population for approximately eight days.

Things began to move rapidly then. Panel discussions, featuring radiation experts from IASL's Health division, were conducted in Los Alamos, Espanola and other northern New Mexico communities. These were enthusiastically received.

A comprehensive emergency traffic plan was laid out and tested on the weekend of Dec. 16-17, 1961. Despite a record snowfall, the plan was a success and many people followed the one-way traffic pattern to their assigned shelters.

About this time a number of articles were carried by the wire services, major newspapers and magazines on the efforts being conducted at Los Alamos in regard to Civil Defense. These articles cited Los Alamos as the first city in the nation in this effort.

The U.S. Defense Department announced in December of that year that 14 pilot cities had been picked to try out a program of stocking public fallout shelters with food and equipment. Los Alamos was named as the first of these selected cities and the only one that would receive supplies for all its public shelters.

"I'm sure that one of the primary reasons we

were selected was due to the fact that we managed to raise the \$40,000 on our own," Porton says. "I feel our initiative and achievements were recognized."

As a result of the efforts of the Los Alamos Civil Defense organization, plus the cooperation of the residents of the community, Los Alamos was cited as the only city in the nation with fallout shelter space for all its people during the Cuban crisis of October, 1962.

In addition to Porton, other top officials within the Los Alamos County Civil Defense organization today include John Schroer, with the AEC's Los Alamos area office, deputy director; Mary Sue Wooten, PUB-2, as executive secretary; and a policy-making group for shelter management headed by a troika of Wright Langham, assistant H-division leader, Robert Drake, assistant GMX-division leader, and Frank Talmadge, P-DO.

In discussing the status of CD in Los Alamos today, Porton said Los Alamos ranks at the top for cities under 25,000 population in regard to preparedness.

"We have developed a strong shelter-management program with assigned shelters for all," he said. "Many other cities are on a first-come, first-served basis as far as shelter assignments. In these areas, the first people in will be okay, but the others will have to search for another shelter."

There is sufficient shelter space on The Hill for all Los Alamos residents plus those who work here but commute from their homes in other communities. There is also more than enough shelter space for any future growth of the community.

Mrs. Wooten said, "We have 46 shelters with about 15,000 persons assigned. Los Alamos shelter assignments are based on 20 square feet of shelter space per person while national average is 10 square feet. The largest shelter is the CMR building with space for 6,575 persons while the smallest assigned shelter is the general warehouse with 61." There are also smaller areas such as power stations, pumping stations, etc., which will be manned by trained personnel at the time the alert is sounded.

Porton noted that the shelters are stocked with a two-week food supply, medical supplies, sanitation kits, radiation monitoring kits, and other emergency equipment.

The water supply for Los Alamos is from underground wells, Porton said, and the CD organization has volunteers who will man the water

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... Civil Defense Program

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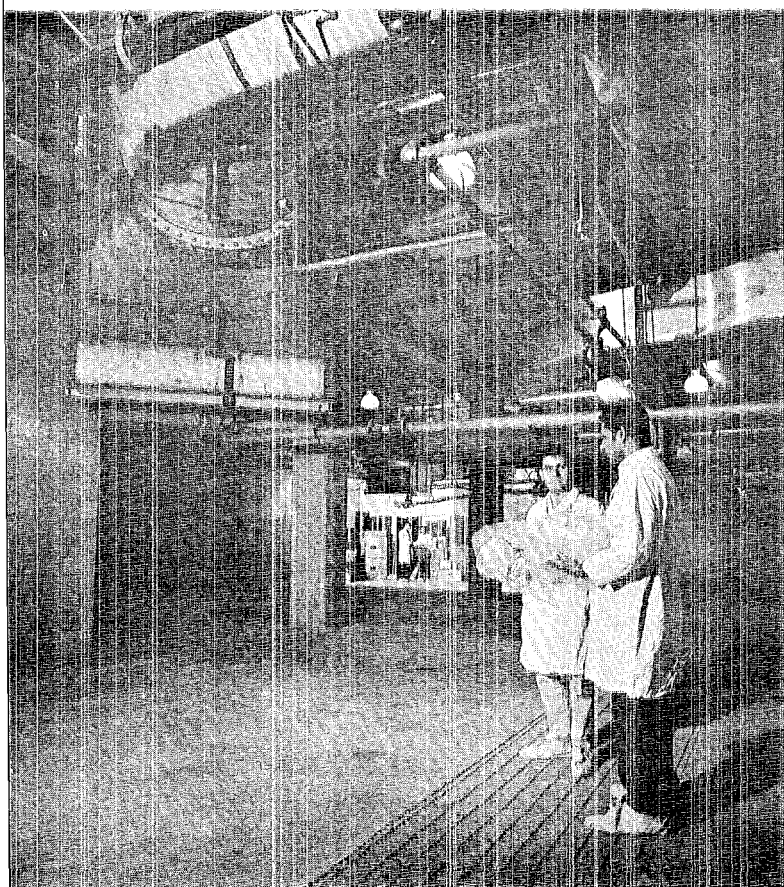
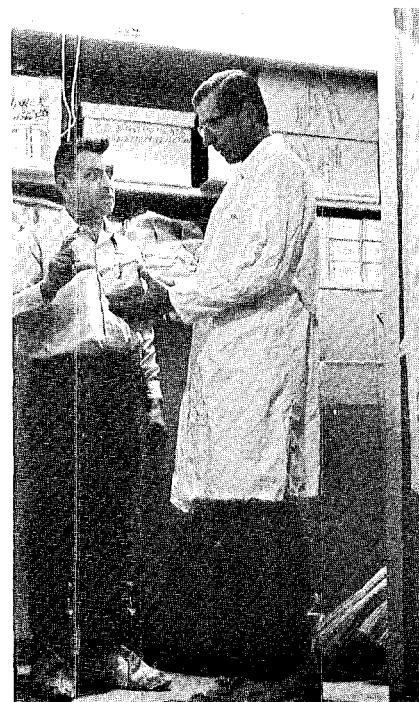
distribution system to keep the valves open. The power plant will also be manned and kept in operation.

"I don't feel that any enemy is going to waste a missile on New Mexico," Porton says. "They will go after the retaliatory areas—such as missile sites—and large industrial complexes. The primary purpose of a sneak attack will not be to kill millions of people but to knock this country out of commission so that it can't strike back. Thus, it could be more easily occupied in the future.

"Therefore, I feel that in the event of a nuclear attack on this nation, the people of Los Alamos will have a comfortable period of time to reach their assigned shelters. Even if they decided to hit Albuquerque, or if a missile went astray and landed near there, we would still have one to two hours before the fallout reaches here. There are only two or three days a year when the winds would be such that we would only have 30 minutes to reach shelter if Albuquerque was hit."

Porton emphasized that the Los Alamos CD planning is based strictly on protection from fallout and noted that the shelters would not offer protection against blast. "In the case of blast or a direct hit, prayers—if you have the time—are all we can recommend."

Helping perform maintenance on Civil Defense equipment in Wing 2 of the CMR building, top, are Orlando Serna, left and Felipe Martinez, both of CMB-AP. The plastic bags contain warden helmets. (Bottom): Frank Talmadge, P-DO, and Bob Drake, GMX-DO, discuss supply procedures in a shelter area in the basement of the Administration building. Both men are members of the policy-making group for shelter management. Drake is also manager of the Administration building's shelter. (Right): Bill Minor, CME-5 (right), manager of the shelter in Wing 2 of the CMR building and Gilbert L. Fuentes, CMB-AP, check out CD equipment.



The Civil Defense director said he hoped that if a sneak attack did occur, that it would be at night or on a weekend so the whole family could go to the shelter together.

"If it happens in mid-day," he said, "fathers are going to rush home for the family, and mothers are going to rush to school for the children, contrary to the CD instructions. This could be very dangerous and contribute to a variety of miscellaneous accidents. More lives will be saved if people will just stay calm and don't panic."

Porton was asked what his Civil Defense group would do—and what the residents should do—in the event the world situation called for manning the shelters?

"The first thing that will happen will be an assembling of the Central Control Group in the basement of the Protective Force Headquarters (Station 100). There the decisions will be made as to what steps to take." The Central Control Group for the CD organization consists of the Laboratory Director, AEC Area Manager, ZIA Manager, Chairman of the Los Alamos County Commission, Civil Defense Director and the LASL Weatherman.

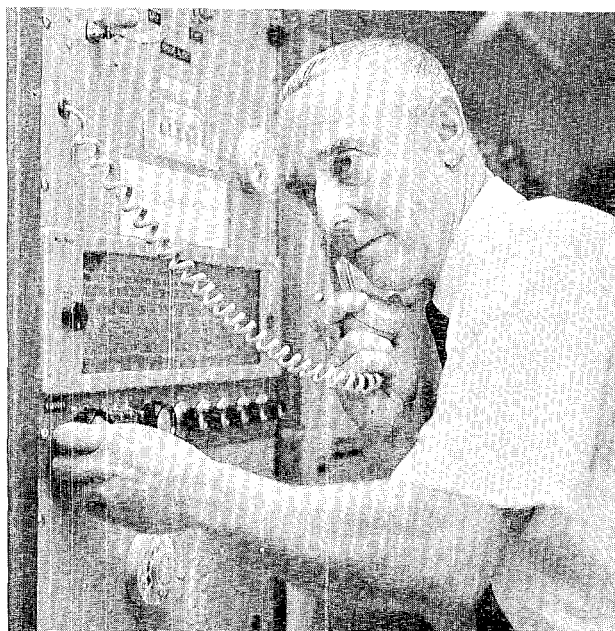
"When it is determined definitely that the people should proceed to their shelters," Porton continued, "the schools will be notified to release the students and send them home. The shelter managers, various Civil Defense officials, police department, and other emergency forces will be notified."

According to Porton each shelter manager, or his appointed representative, plus the schools, police, etc., can be reached by the dialing of one telephone digit. This one dialing buzzes an estimated 160 persons at their home telephones. When they answer the phone they hear either a recorded message informing them as to what steps to take or an actual voice giving instructions. They can not talk on this emergency alerting system, only listen. The system is tested on a regular basis.

The shelter manager will be told to proceed to his shelter and place in effect previous instructions. These involve notifying the rest of his staff which includes either a minister or lay reader, nurse or someone trained in first aid, radiation monitors, and specialists such as plumbers, carpenters, electricians and communications personnel.

Then the warning horns will blow to alert the community.

"If the whistle ever blows at any time other



Richard Kennedy, chief of communications for the Los Alamos Civil Defense organization and ENG-5 group loader, tests radio equipment at Station 100.

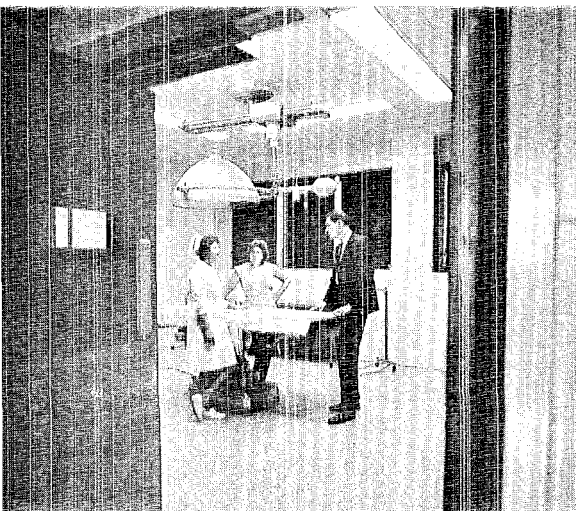
than at 5 p.m. on Mondays when it is tested, tune in immediately to KRSN for further details," Porton said. "Also, begin collecting warm clothing, blankets or sleeping bags, supplementary food, books and/or games, and other personal items and head for your shelter. Do NOT bring pets, liquor or firearms."

The Medical Center will remain open during an alert and the doctors and hospital staff will stay there. Patients will be brought to the hospital from the shelters, instead of bringing the doctors to the patients, because of the better facilities at the hospital and in order to provide a central location for treating the injured and ill. "It is not felt that the short time spent in making a dash from a shelter to the hospital will expose anyone to enough fallout to result in illness," Porton says.

When you arrive at your shelter, find a place out of the way and sit down. Be prepared to do exactly as you are told by your shelter manager or his representative. The shelter managers and their alternates hold deputy sheriff commissions and have all the authority of a ship's captain. HIS WORD IS LAW. Failure to follow orders or actions disrupting the shelter life will result in disciplinary measures as determined by the manager. This could include expulsion from the shelter.

There is no way of determining how long you will have to remain in the shelter. It could be from a few hours to a few weeks.

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In an operating room at the Medical Center, Mrs. Clare Greco, director of nurses, left; Mrs. Betty Schlatterer, operating-room supervisor; and R. D. Hill, administrator, discuss the Center's role in Civil Defense.



An important branch of the Los Alamos Civil Defense organization, according to Porton, is the Search and Rescue group headed by Al Evans, N-6. At a recent meeting, Art Williams, P-7 (standing), discusses the use of radio equipment during an emergency with members of the group.

... Civil Defense Program

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In any isolated, or semi-isolated, group, communications are an extremely important factor for both safety and morale. How does the Los Alamos Civil Defense organization shape up in this area?

"We are extremely proud of our emergency communications," Porton says. "All the shelters are inter-connected by telephone and by short-wave radio. In the event a family became separated during an emergency, they could easily be reunited by communications. In this manner, we could assure a mother that her children were safe and being taken care of in another shelter.

"We also have one of the finest Civil Defense communication setups, through the ham radio system, for obtaining information from the outside world . . . assuming there is an outside world to communicate with. In this way we should be able to find out just what is going on and if it is indeed a sneak attack or only a false alarm."

Los Alamos is nationally-known for its efforts and programs in regard to Civil Defense. To what does Porton attribute this?

"Our strength lies in three factors," he said. "First, we have the backing of the top officials of the four main employers in Los Alamos--LASL, the AEC, Zia, and the county. Second, the mem-

bers of the Civil Defense organization as well as the people in the community are 'believers' in a good program. And, number three, we have what is probably the finest shelter-management group in the country."

What advice could the head of the Civil Defense effort in Los Alamos give to the residents to better prepare themselves for the future?

"If you don't know what shelter you are assigned to, or where it is located, you should call the Civil Defense office and find out. Also, make sure your children know where it is. If both parents are working, make advance arrangements for a neighbor to provide transportation for your small children. In short, if anyone has any questions about Civil Defense, feel free to telephone Mrs. Wooten at the Civil Defense office, 7-5456."

Also, an excellent publication covering Civil Defense in Los Alamos entitled "Fallout Shelter Handbook" is available from Mrs. Wooten. These were distributed to all residents at the time of publication in early 1964, but if your copy has been lost or you never received one, extras are available.

Above all, keep in mind a statement by Laboratory Director Norris E. Bradbury at a Civil Defense meeting in 1962: "A fallout shelter is like a lifeboat, made to save lives, not for a luxury cruise."



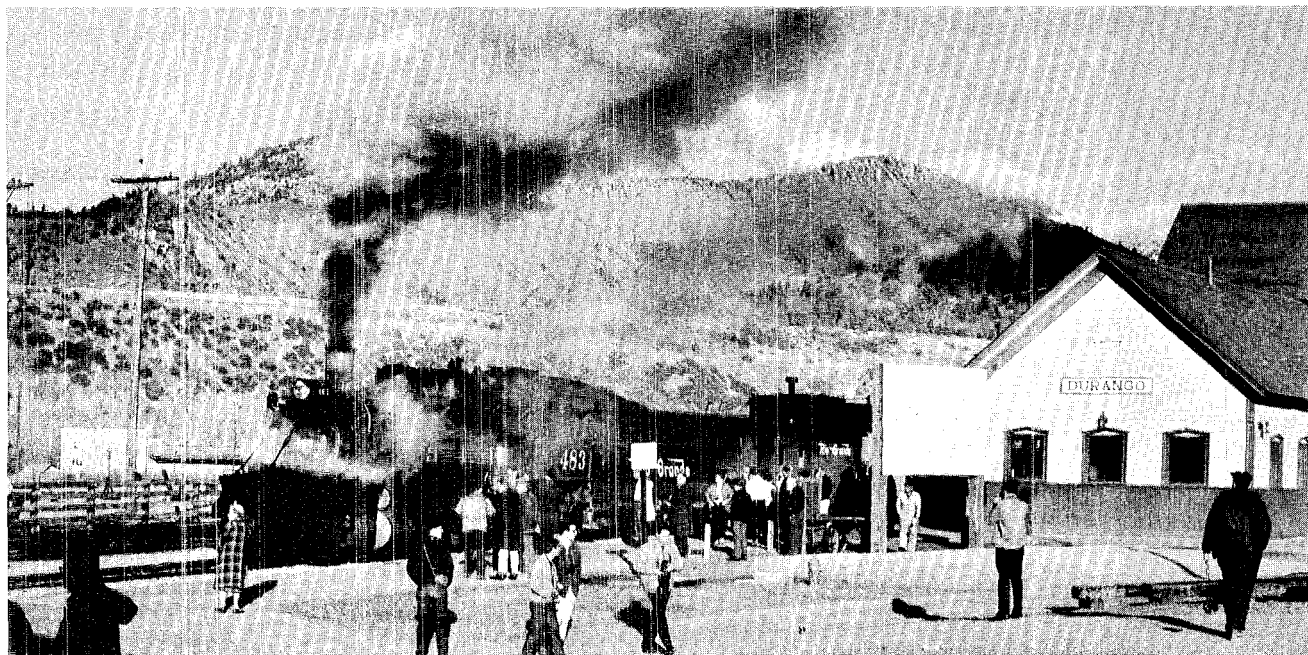
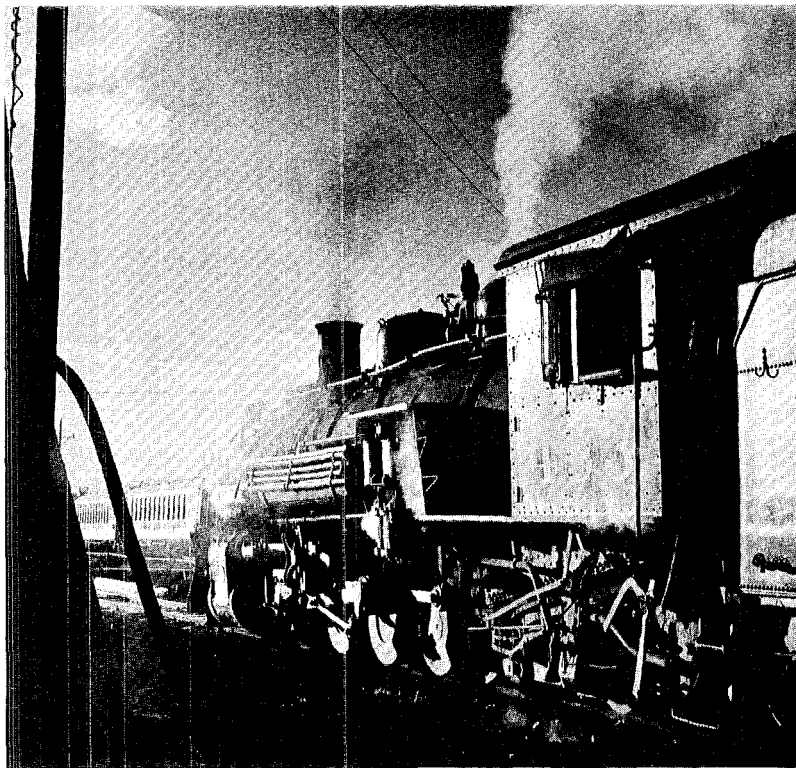
Engine No. 483 . . . Its Last Hurrah?

Story and Photos By Bill Jack Rodgers

Engine No. 483, a caboose, and three passenger cars may have made their final passenger run on the Denver & Rio Grande Western Railroad's narrow gauge line between Durango and Antonito, Colo. Recently, about fifty persons boarded the train at Durango for the 200-mile trip of spectacular panoramic beauty across Northern New Mexico and Southern Colorado. Those making up the passenger list were seriously concerned with the continued operation of the "little train."

The D & RG Western has requested the Interstate Commerce Commission for permission to

continued on next page



(Top): In the frosty dawn, Engine No. 483 stands ready for the two-day run from Durango, across Southern Colorado and Northern New Mexico, to Antonito. (Above): Passengers and other train enthusiasts took pictures right up until departure time. (Right): The train made its first stop enroute at Florida, Colo.





The train nudged its way across the snow-covered Lobato Trestle on the way up Cumbres Pass.



The "end of the line" was the station at Antonito.

Engine No. 483 . . .

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abandon the narrow gauge. The Railroad contends it has been operating at a loss of a half-million dollars each year. In the early 1880's, when the track was laid, the only way into this fabulous wilderness of logging, mining, and great scenic beauty was by rail. Today, trucks carry payloads to the limited industry and dwindling population in this area.

Numerous groups and people from New Mexico and Colorado are interested in keeping the train in operation. They feel an important part of American history will vanish if the train is discontinued. The U.S. Department of Interior, as well as the states of Colorado and New Mexico, have started a study of the railroad. Kirschner Assoc., Inc., of Albuquerque, is doing an extensive feasibility study to determine the "feature use" of the line and the future possibilities of its operation. This study is sponsored by the Four Corners Development Commission.

The trip, starting at Durango, winds its way east through the high plateau country of southwestern Colorado which is dotted with farms and ranches. The track skirts the northern-most edge

of Navajo Lake into the rugged logging country around Dulce and Chama, New Mexico. After an overnite stay at Chama, No. 483 chugged its way over the snow-covered trestle at Lobato and up to Cumbres Pass where it was greeted by a host of snowmobiles. Cumbres, the highest point on the road, has an elevation of 10,015 feet. The track to Toltec crosses high over some of the most indescribable and spectacular scenic grandure of New Mexico. An almost birdseye view of Toltec Gorge is afforded from the stop at Garfield's Monument just prior to entering Toltec Tunnel. The only access into this part of New Mexico is by hiking or the narrow gauge.

The train continues east through the mountainous terrain and rims valleys of absolute beauty. Switchbacks give a gradual descent and a north-side view of San Antonio Mountain as the train rolls onto the flats near Antonito, Colo. Antonito was the "end of the line" for most of the passengers.

Today the interest mounts in both New Mexico and Colorado to preserve the historic "little train" and the recreational opportunities it offers in this scenic wonderland.

short subjects

Two Laboratory employees retired in December and two others plan to retire in January.

Ann Gregersen, D-6, retired Dec. 13 after more than 14 years with D division. Her husband, Harry, is employed in SD-2. They will continue to live in Los Alamos.

Charles Gregory, GMX-3, retired Dec. 31. He was an employee of the Laboratory for more than 19 years. He and his wife will continue to make their home in Los Alamos and plan to spend some time touring the northwest, and hunting and fishing.

George Everhart, P-3, will retire Jan. 3. He was stationed in Los Alamos during the war years with the Special Engineering Detachment and, after completing college coursework, returned to work in P-3. Everhart will reside in Los Alamos, but plans to travel extensively before making other commitments.

Kathleen Donovan, P-1, will retire Jan. 17 after more than 20 years of employment at LASL. She was with the Women's Army Corps before joining P-1. She plans to move to Santa Fe in the near future.



The Laboratory's Personnel department is accepting applications for its Summer Vacation Replacement program.

The program is open to graduating high school seniors who will be 18 years of age on or before June 15, 1969, or to undergraduate students who are in good academic standing at a college, university, business college or technical institute. The deadline for submitting applications is Jan. 15.



About 60 young people from economically disadvantaged homes in the surrounding area are expected to be employed by LASL this coming summer under the President's Summer Youth Opportunity Campaign.

The New Mexico State Employment Service will be responsible for the selection of candidates and for certifying their eligibility on the basis of economic need. The program is open to persons between the ages of 18 and 21 who meet eligibility requirements. Deadline for applications is Jan. 15.

Robert E. Miller, who succeeds **James E. Reeves** as manager of the Atomic Energy Commission's Nevada Operations office in Las Vegas, assumed his new duties Jan. 1.

Reeves retired from Federal service after 39 years.

Miller joined the AEC in Albuquerque in 1952 where he progressed from chief of personnel operations to special staff assistant.



He and his family moved to Las Vegas in 1961. He was appointed director of plans when the Nevada Operations office was organized in 1962. He was later named assistant manager for

plans and budgets and then deputy manager.

He participated in early planning for development of nuclear rocket test facilities at the Nevada Test Site and has been involved in the Commission's Plowshare Program for peaceful applications of nuclear explosives, including Projects Gnome and Gasbuggy in New Mexico. He has been associated with nuclear weapons test programs in Nevada and the Pacific since 1957.



Four Los Alamos Scientific Laboratory employees helped author the new book, "Computing Methods in Reactor Physics." **B. G. Carlson**, T-1 group leader, and **K. D. Lathrop**, T-1, co-authored a 90-page chapter on "Transport Theory—The Method of Discrete Ordinates," and **R. B. Lazarus**, C-division leader, **W. R. Stratton**, N-2, and **T. H. Hughes**, Argonne National Laboratory, co-authored a 30-page chapter on "Coupled Neutronic-dynamic Problems."

The main function of the nearly 600-page book ". . . is to help graduate students, faculty members and workers in the field obtain this understanding of the formal methods used in large codes. The material is divided into eight main chapters, seven of which deal in detail with basic problems of numerical analysis and computation in the field of reactor physics. The eighth chapter is devoted to the development of a fundamental mathematical model of neutron transport. . . ."

Blackwell Takes AEC Manager's Seat in L.A.

H. Jack Blackwell assumed the position of manager of the Atomic Energy Commission's Los Alamos area office Dec. 15, succeeding **Herman E. Roser** who recently transferred to Commission headquarters in Washington, D.C., as assistant director of the Division of Military Application.

Blackwell, a native of Rockland County, New York, joined the AEC in Los Alamos in 1947. He had worked with the Federal Bureau of Investigation in Washington from



1940 to 1944 and served in the U.S. Navy during 1944 and 1945. He was employed in the Albuquerque Operations office from 1951 to 1958 in assignments involving operations, and was appointed manager of the San Antonio, Texas, area office in 1958. When the office was closed in 1965, he became manager of the Amarillo, Texas area office.

Blackwell attended the University of Texas at El Paso, received the B.S. degree from Georgetown University in Washington, D.C., and took some graduate work at the University of New Mexico.

He and his wife, Billie, have three children: Hank, 17; Jeff, 13; and Janis, 9.

The Technical Side

Presentation at Eighth Conference on Thermal Conductivity, Purdue University, West Lafayette, Ind., Oct. 7-10:

"The Thermal Conductivity of a Graphite Rod" by P. Wagner, J. A. O'Rourke, J. M. Dickinson, and L. B. Dauelsberg, all CMF-13

Presentation at a meeting of the Permian Section of the American Institute of Chemical Engineers, Odessa, Texas, Oct. 15:

"The Los Alamos Meson Physics Facility—What it is and What it will Do" by L. Rosen, MP-DO

Presentation at colloquium, University of Toledo, Ohio, Oct. 15:

"Pion Production in Nucleon-Nucleon Collisions at Threshold" by R. R. Silbar, M. E. Schillaci, and J. E. Young, all T-9

Presentation at colloquium, University of Virginia, Charlottesville, Va., Oct. 18:

"Pion Production in Nucleon-Nucleon Collisions at the Threshold" by R. R. Silbar, M. E. Schillaci, and J. E. Young, all T-9

Presentation at colloquium, National

Bureau of Standards, Washington, D.C., Oct. 21:

"Electromagnetic Mass Differences of Octet Baryons" by R. R. Silbar and F. Uchiyama-Campbell, both T-9

Presentation at colloquium, Catholic University of America, Washington, D.C. Oct. 22:

"Pion Production in Nucleon-Nucleon Collisions at Threshold" by R. R. Silbar, M. E. Schillaci, and J. E. Young, all T-9

Presentation at Nuclear Engineering Department of Texas A & M, College Station, Texas, Oct. 29:

"Fast Critical Assemblies" by J. A. Grundl, N-2

Presentation at Physical Chemistry Seminar, Lawrence Radiation Laboratory, Livermore, Calif., Oct 30:

"Electric Signals Generated by Shock and Detonation Waves" by B. Hayes, GMX-8

Presentation at a meeting of the Trinity Section of American Nuclear Society, Cerrillos, N.M., Nov. 1:

"The Case for Negative Pions in Radiation Therapy" by L. Rosen, MP-DO

Presentation at International Conference on Sodium Technology and Large Fast Reactor Design, Argonne National Laboratory, Nov. 7-9:

"An Integral Full-Flow Vacuum Distillation Sampling System for Use in a High Temperature Radioactive Sodium Environment" by V. J. Rutkauskas, K-3

"Oxygen Transport in Sodium" by C. C. McPheeters and J. C. Biery, K-3

Presentation at University of Missouri, Rolla, Nov. 8:

"Analysis of an Initial Value Problem for the Neutron Transport Equation with Delayed Neutrons" by W. L. Hendry, T-1

Presentation at seminar at the C. F. Kettering Research Laboratory, Yellow Springs, Ohio, Nov. 9:

"Phosphorus in Histones" by G. R. Shepherd, H-4 (invited talk)

Presentation at American Nuclear Society Meeting, Washington, D.C., Nov. 10-15:

"Delayed Neutron Kinetic Response Methods of Nondestructive Assay" by R. H. Augustson, H. O. Menlove, C. N. Henry, C. F. Masters, and G. R. Keepin, all N-6

"Applications of Neutron Interrogation to Assay of Fissionable Material" by M. M. Thorpe, C. N. Henry, D. B. Smith, H. O. Menlove, and R. H. Augustson, all N-6

"A Resonance Self-Indication Technique for Isotopic Assay of Fissile Materials" by H. O. Menlove, M. M. Thorpe, and R. B. Walton, all N-6

"Calculation of Delayed Neutron Multiplication in Thin Subcritical Systems" by C. E. Lee, T-4, and C. F. Masters, N-6

"Criticality Research at the Los Alamos Scientific Laboratory and at the Rocky Flats Plant" by W. R. Stratton, N-2

"High Efficiency Neutron Detectors for Nuclear Safeguards Applications" by L. V. East and R. B. Walton, both N-6

"Neutron and Gamma Radiations from Pure ^{238}Pu " by J. Bubernak, G. M. Matlack and C. F. Metz, all CMB-1

"New Methods and Techniques in Nuclear Safeguards Research and Development" by G. R. Keepin, N-6

"Remote Systems Requirements of Accelerators" by M. T. Wilson, MP-6

Presentation at a meeting of the California Alumni Association, Berkeley, Calif., Nov. 11:

"The Los Alamos Pion Factory (A New Tool for Basic Research and Practical Application)" by L. Rosen, MP-DO

Presentation at Michigan State University, East Lansing, Nov. 11:

"Vacuum Polarization in Proton-Proton Scattering" by L. Heller, T-9

Presentation at seminar, University of Minnesota Physics Department, Minneapolis, Minn., Nov. 11:

"Continuity of Phase Shift at Continuum Bound State" by A. M. Bolsterli, T-9

Presentation at Eighth Annual Meeting of the American Society for Cell Biology, Boston, Mass., Nov. 11-13:

"The Energetics of Valine Incorporation by Cultured Lymphoma Cells" by C. T. Gregg, H-4

"Phosphorus Content of the Basic Nuclear Proteins of Cultured Mammalian Cells" by G. R. Shepherd, Billie Jean Noland, and Carol N. Roberts, all H-4

Presentation at Conference on Ther-

mophysical Properties of Solid Materials at High Temperatures, Baden-Baden, Germany, Nov. 11-13:

"Equipment and Techniques for Measurements of Thermal Conductivity, Thermal Expansion and Associated Properties Above 1000°C " by P. Wagner, CMF-13 (invited talk)

Presentation at technical meeting of the International Metallographic Society, Denver, Colo., Nov. 11-13.

"Metallographic Preparation of Microspheres With Loose Concentric Shells" by J. P. Bertino, CMB-8

"A Technique for the Metallographic Preparation of Metallic Sodium" by J. H. Bender, K-2

Presentation at Michigan State University, East Lansing, Nov. 12:

"The Soft Photon Theorem for Bremsstrahlung" by L. Heller, T-9

Presentation at meeting of local chapter of American Society for Metals, Los Alamos, Nov. 12:

"The Engel-Brewer Theories of Metals and Alloys" by G. L. DePoorter, CMB-3

Presentation at Symposium on Reflectance Spectroscopy, Eastern Analytical Symposium, New York, N.Y., Nov. 13-15:

"The Theory of Light Reflection in Diffusing Media" by H. G. Hecht, CMF-2

Presentation at Department of Physics and Astronomy, University of Maryland, College Park, Nov. 22:

"Application of Diffraction Theory to Nuclear and Atomic Scattering" by V. Franco, T-9

Presentation at American Physical Society Meeting, Miami Beach, Fla., Nov. 25-27:

"A Conjecture Regarding the Shape-Isomerism Hypothesis for $^{242}\text{-Metastable Americium}$ " by J. R. Nix and G. E. Walker, both T-9

"A Measurement of the Capture Cross Section of ^{147}Pm in the Energy Range 20 eV to 10 keV" by J. G. Beery, P-3 and J. W. Coddling (Idaho Nuclear Corp.)

"Analyzing Power of the $T(d,\alpha)n$ Reaction" by G. G. Ohlsen, P-

DOR, J. L. McKibben and G. P. Lawrence, both P-9

"The Angular Distribution of Neutron Velocity and Intensity from the Dense Plasma Focus" by J. W. Mather, K. D. Ware, A. H. Williams, P. J. Bottoms, and J. P. Carpenter, all P-7

"An Improved Spark Gap and Trigger System for Theta-Pinch Experiments" by R. F. Gribble, P-15

"An Investigation of Z-Pinch Heating by Strong Shocks Using Magnetic Energy Storage" by J. N. DiMarco and L. C. Burkhardt, both P-14

"Calculations of Pressure Effects and Plasma Diffusion in a Quadrupole" by D. A. Baker, P-18, M. D. J. MacRoberts and L. W. Mann, both T-5

"Characteristics of a 50 kV-10 kJ Vacuum Switch Module" by A. H. Williams, K. D. Ware, J. W. Mather, J. P. Carpenter and P. J. Bottoms, all P-7

"Continuous Pinch Operation of the Coaxial Gun" by J. Marshall and I. Henins, both P-17, and A. A. Newton, P-15

"Control of Hot Plate Temperature Profiles" by D. B. Henderson, F. E. Wittman, and H. Dreicer, all P-13

"The Development of a Low-Density Plasma Halo in a Theta Pinch" by H. Herold, P-15

"Discrepancies in the ^{10}B Absorption Cross Section in the keV-MeV Region" by Leona Stewart, P-DO

"Effect of Oscillating Longitudinal Currents on a 1-Meter Theta-Pinch Column" by W. E. Quinn, E. M. Little and F. L. Ribe, all P-15

"Electromagnetic Mass Differences of Octet Baryons" by R. R. Silbar and F. Uchiyama-Campbell, both T-9

"First Half Cycle Operation of the Columba Experiment" by P. R. Forman, A. Haberstick, H. J. Karr, J. A. Phillips and A. E. Schofield, all P-14

"Fission Barrier Determinations and Fragment Angular Correlations for the Pu-244, U-238, and Th-232

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the technical side . . .

continued from page 21

Compound Nuclei from (t, pf) Reactions" by J. D. Cramer, W-8, and H. C. Britt, P-DOR

"The Fission Cross Section of ^{232}U " by J. A. Farrell, W-8

"Fission Fragment Angular Correlations from ^{233}U , ^{235}U , and ^{239}Pu (t, df) Reactions" by H. C. Britt, P-DOR, and J. D. Cramer, W-8

"Instability of Low Beta Magnetic Flute Modes Caused by Transverse Anisotropy" by R. L. Morse, P-18

"Installation of the LASL Lamb-Shift Polarized-Ion Source on an FN Tandem Accelerator" by J. L. McKibben and G. P. Lawrence, both P-9, and G. G. Ohlsen, P-DOR

"Levels in ^{161}Dy , ^{159}Dy , and ^{157}Dy " by M. J. Bennett and R. K. Sheline, both P-2

"Levels of Strontium-88 from the Decay of Rubidium-88" by R. C.

Ragaini and J. D. Knight, both J-11

"Levels of ^{90}Zr as seen in Triton Inelastic Scattering" by E. R. Flynn, P-10, D. D. Armstrong, P-12, J. G. Beery, P-3 and A. G. Blair, P-DOR

"Masses and Coupling Constants Inferred from a Velocity-Dependent Potential" by J. E. Brolley, P-DOR

"Microwave Emission by Upper Hybrid Resonance Electrons" by H. Dreicer, P-13

"Nonlinear Development of the Two Stream Instability" by T. P. Armstrong (Univ. of Kansas) and J. P. Freidberg, P-18

"Nucleon-Nucleon Experiments" by J. C. Hopkins, P-DOR (invited talk)

"Numerical Investigation of the Two-Stream Instability via Hamilton's Principle" by H. R. Lewis, P-18

"Numerical Simulation of Collis-

ionless Shocks" by C. R. Shonk, J-10, and R. L. Morse, P-18

"Pion Production in Nucleon-Nucleon Collisions at Threshold" by M. E. Schillaci, R. R. Silbar and J. E. Young, T-9

"Plasma Turbulence Interpretation of the Resistance of a Theta-Pinch Column to Oscillating Longitudinal Currents" by F. L. Ribe and W. E. Quinn, both P-15, and W. B. Riesenfeld, P-18

"R-Matrix Resonance Parameters" by D. W. Bergen, W-8

"Radial Stability of the Pinch in the Columba Experiment" by A. Haberstick, and P. Forman, both P-14

"Stability of a High β Theta Pinch" by J. P. Freidberg and R. L. Morse, both P-18

"The States of ^{117}Sn " by D. B. Beery, W. B. Chaffee, W. H. Kelly, and W. C. Harris (all Michigan State University), and G. J. Berzins, P-2

"Study of the Helium-3(d,p)He-

new hires

Accounting department

Lucile A. Hodges, Los Alamos, AO-7

C division

Larry L. Gleadle, Gallup, C-1

Bobby Gurule, Espanola, C-1

Francisco G. Roybal, Santa Fe, C-1

Phil J. Salazar, Espanola, C-1

CMB division

William V. Cummings, Pleasanton, Calif., CMB-1

Richard E. Honnell, Cincinnati, Ohio, CMB-11

Charles D. Montgomery, Las Vegas, Nev., CMB-14 (Rehire)

D division

Helen L. Byers, Los Alamos, D-2 (Rehire)

Jeanette Martinez, Velarde, D-2 (Rehire)

Engineering department

Helen M. Carpenter, Los Alamos, ENG-5 (Casual)

Patricia A. Hill, Lansing, Mich., ENG-5 (Casual)

GMX division

Jose A. Rendon, Jr., Velarde, GMX-3

John R. Barnes, Los Alamos, GMX-8

J division

John H. Wolcott, Waterford, Va., J-16

K division

Richard A. Vandergust, Argonne, Ill., K-2

MP division

Ricardo P. Martinez, Espanola, MP-AE

Patricia M. Rodgers, Los Alamos, MP-4

P division

Richard D. Stallings, Amarillo, Texas, P-2

Edward A. Romero, Santa Fe, P-16

Personnel department

Constance D. Benton, Los Alamos, Per-1 (Casual)

Carol J. Nagle, Los Alamos, Per-1 (Casual-Rehire)

Public Relations

Marga A. Legsdin, Los Alamos, PUB-2 (Casual)

N division

Frank T. R. Capelli, Jr., Ventura, Calif., N-6

James H. Langenbrunner, Los Alamos, N-6 (Casual)

Supply and Property department

John L. Moore, Las Vegas, Nev., SP-3

W division

Mildred E. Kuhl, Los Alamos, W-1

Wage and Salary department

Cecil E. Pollard, Los Altos, Calif., WSD

lithium-4 Reaction with Polarized Deuterons" by V. S. Starkovich and G. G. Ohlsen, both P-DOR, D. C. Dodder, T-9, Kathleen H. Witte, C-7, and W. G. Simon (University of Wyoming)

"Study of the $^{40}\text{K}(\text{n},\gamma)^{41}\text{K}$ Reaction" by E. B. Shera and D. F. Beckstrand, both P-2

"Tests of the LASL Lamb-Shift Polarized Ion Source" by G. P. Lawrence and J. L. McKibben, both P-9, and G. G. Ohlsen, P-DOR

"Trapped Reverse Magnetic Field Operation in the Columba Experiment" by J. A. Phillips, P. R. Forman, A. Haberstich, J. H. Karr and A. E. Schofield, all P-14

"X-Ray Measurements on the Dense Plasma Focus" by P. J. Botoms, J. P. Carpenter, J. W. Mather, K. D. Ware and A. H. Williams, all P-7

"Z-Current Experiments on a 150-kJ Theta Pinch" by K. S. Thomas, G. A. Sawyer and D. M. Welton, all P-15

Presentation at Computer Science Seminar, Nov. 14, and at IEEE Chapter Meeting, Nov. 15, Rice University, Houston, Texas:

"Computer-Aided Research in Discrete Mathematics" by M. B. Wells, C-7

Presentation at seminar, University of New Mexico, Albuquerque, Nov. 15:

"Composition of Crystalline Complexes Determined by Molar Refractivity" by R. A. Penneman, CMF-4

Presentation at Southern Colorado State College, Pueblo, Nov. 18:

"f Electrons, the Kondo Effect and Superconductivity" by H. H. Hill, CMF-DOT (invited talk)

Presentation at 14th Annual Conference on Magnetism and Magnetic Materials, New York City, N.Y., Nov. 18-21:

"Neutron Diffraction Investigations on Uranium Antimony, Uranium Bismuthide and Uranium(3) Uranium Antimony(4)" by C. E. Olson, CMF-13, and W. C. Koehler, Oak Ridge National Laboratory

"Sub Kondo Temperature Properties of Localized Moments in Metals" by M. D. Daybell and W.

A. Steyert, both CMF-9 (invited talk)

Presentation at seminar, New Mexico State University, University Park, Nov. 19:

"Second Sound in Solids: Theory and Experiment" by W. C. Overton, Jr., CMF-9

Presentation at 10th Liquid Propulsion Symposium, Las Vegas, Nev., Nov. 19-21:

"Liquefied Hydrogen Safety—A Review" by F. J. Edeskuty, CMF-9, and Roy Reider, H-3

Presentation at research colloquium, University of Manchester, England, Nov. 20:

"Various Aspects of the Graphite Research Program at LASL" by P. Wagner, CMF-13

Presentation at 14th AEC Coated Particle Fuels Working Group Meeting, Oak Ridge, Tenn., Nov. 20-21:

"Development of Particles Coated with Pyrolytic Carbon" by R. J. Bard and H. R. Baxman, both CMB-8

"Measurement of Pyrocarbon Thermal Conductivity by the Fission Couple Method" by G. T. Brock and F. P. Schilling, both K-5

Presentation at seminar, Florida State University, Tallahassee, Fla., Nov. 21:

"New Probes for Old Nuclei" by L. Rosen, MP-DO

Presentation at seminar, University of Florida, Gainesville, Fla., Nov. 22:

"The Washington Meson-Go-Round" by L. Rosen, MP-DO

Presentation at Electro-Metallurgy Symposium, Cleveland, Ohio, Dec. 2:

"Electro-Metallurgy of Plutonium" by J. A. Leary and L. J. Mullins, both CMB-11

Presentation at Western National Meeting of the American Geophysical Union, San Francisco, Calif., Dec. 2-4:

"A Solar Flare Disturbance in the Interplanetary Medium" by Joan Hirshberg (NASA Ames Research Center), S. J. Bame, P-4 and A. J. Hundhausen, T-12

"Efficiency of Conversion of Electrical Energy Into Visible Radiation

in Lightning Return Strokes" by T. R. Connor, J-10

"Relationships Between Auroral Emissions" by J. K. Theobald, J-10

"Spectral Intensities Emitted by Lightning Discharges" by G. E. Barasch, J-10

Presentation at Plutonium Research Information Meeting, LASL, Dec. 4-5:

"Diffusion in Delta Plutonium Alloys" by R. E. Tate, CMF-5

"Hall Effect in Oriented α Pu" by T. R. Loree and H. T. Pinnick, both CMF-5

"Low Temperature Thermal Conductivity of Some Delta-Pu Alloys" by J. F. Andrew, CMF-5

"X-Ray Line Broadening Analysis" by R. B. Roof, Jr., CMF-5

Presentation at Southwest Regional Meeting of the American Chemical Society, Austin, Texas, Dec. 4-6:

"A Shock Tube Study of Recombination in the Hydrogen-Oxygen Reaction Using Infrared Emission with Water Vapor" by L. S. Blair and R. W. Getzinger, both GMX-7

"Calculation of EPR Line Shapes for Glassy Solutions of Transition Metal Ions" by Judith C. Hampel and L. O. Morgan (both University of Texas), and W. B. Lewis, CMF-2

"The Crystal Structure of Praseodymium Hydroxide" by A. L. Bowman, CMB-3 and G. P. Arnold, P-2

"Further Studies of the Alkali-Halogen Reactions" by N. C. Blais, CMF-4

"Isotopic Effects as Seen in the Thermal Expansion of Lithium Hydride" by J. L. Anderson, F. E. Pretzel, J. E. Nasise, and K. Philipson, all CMB-3

"Molecular Beam Kinetics: a Number of Chlorine Atom Exchange Reactions" by J. B. Cross and N. C. Blais, CMF-4

"Some Applications of High Resolution Molecular Spectroscopy to Gas Kinetics" by R. Engleman, N. R. Greiner, and P. E. Rouse, Jr., all GMX-2

Presentation at National Center for Radiological Health's Seminar Program, Rockville, Md., Dec. 6:

"The Problem of Large-Area Plutonium Contamination" by W. H. Langham, H-4 (invited talk)

20

years ago

in los alamos



Culled from the January, 1949, files of the Los Alamos Skyliner by Robert Porton

Hero Twists Lion's Tail

Los Alamos workers who live off the Hill and were caught in last Wednesday's State Police roadblock had a new hero this week—a man who is not afraid to talk back. There were some 1,500 persons in that dreary line who found out after nearly two hours of waiting that the miles-long traffic tie-up was just a cursory check on drivers licenses. The only protester was Courtney Slack, a burly one-time United States Army cavalryman. What he told the gallant captain of police will not be printed in this family newspaper, but a Santa Fe judge decided it was \$50 worth of abusive language. Plus costs, of course. When word of this reached the Hill, Slack's fellow workers started a collection to pay for the fine of their champion. Other drivers heard of the fund and so much money came in that organizers of the movement decided to use the excess to buy Slack some permanent gift as a token of their esteem—a loving cup.

Gamow Heard in Outstanding Talk

Dr. George Gamow, University of California consultant in theoretical physics, and best-seller author held his audience spellbound in Recreation hall when he lectured to a packed house on "The Origin of the Universe." Tall, bespectacled Gamow received his Ph.D. in physics from Leningrad University and has been a fellow at the University of Gottingen, Germany; University of Copenhagen, Denmark and Cambridge, England. He is a member of the American Physical Society and several astronomy groups.

Hill Cows Don't Give a Hang

Los Alamos came in for a bit of horseplay (or cowplay) in a recent issue of the Boston Herald. A daily cartoon featuring Dilemma, the Cow (replete with an upper plate and five-count-'em, five-faucets), mentioned that half the cows like horns curling in front of their ears, and the other half like them behind the ears. Fashions for cows being what they are, the cartoonist Dahl drew a cartoon from a Los Alamos "photograph" showing a cow with one horn fore and the other aft. He concludes by saying it appears that Los Alamos cows just don't give a hang. Anyone know of any Los Alamoos?

Dorm Group Gripes

Over the bloody but unbowed heads of the Dormitory Planning committee, monthly rental rates for seven dorms have been increased. At the same time it was revealed that maid service in all the dormitories will be cut sharply. It brought furious comments from one Augustus Frederick Franz, who, besides bearing a procession of kingly names, is a University of California instrument-maker, a self-proclaimed rabble-rouser from New England and a Hill-dweller for four years. Franz, who lives in Dorm 102, one of the four so-called priority dormitories where rent was doubled from \$15-\$30 monthly, set out immediately to call a protest meeting.

what's doing

MESA PUBLIC LIBRARY EXHIBITS: New Mesa prints on display from Dec. 31, through Jan. 9. Pen and Ink sketches, Jan. 9, through Jan. 28, by Doyle Davis.

LOS ALAMOS CONCERT ASSOCIATION: There will be no presentation in January.

PUBLIC SWIMMING: High School Pool—open swimming—Monday, Tuesday and Wednesday from 7:30 to 9 p.m., and Saturday and Sunday from 1 to 6 p.m.; Adult Swim Club, Sunday, 7 to 9 p.m.

SIERRA CLUB: Luncheon meeting at noon, first Tuesday of each month, South Mesa Cafeteria.

OUTDOOR ASSOCIATION: No charge; open to the public. Contact leader for information about specific hikes.

Jan. 7—Pipe Line Road, Ed Kmetko, 8-4911

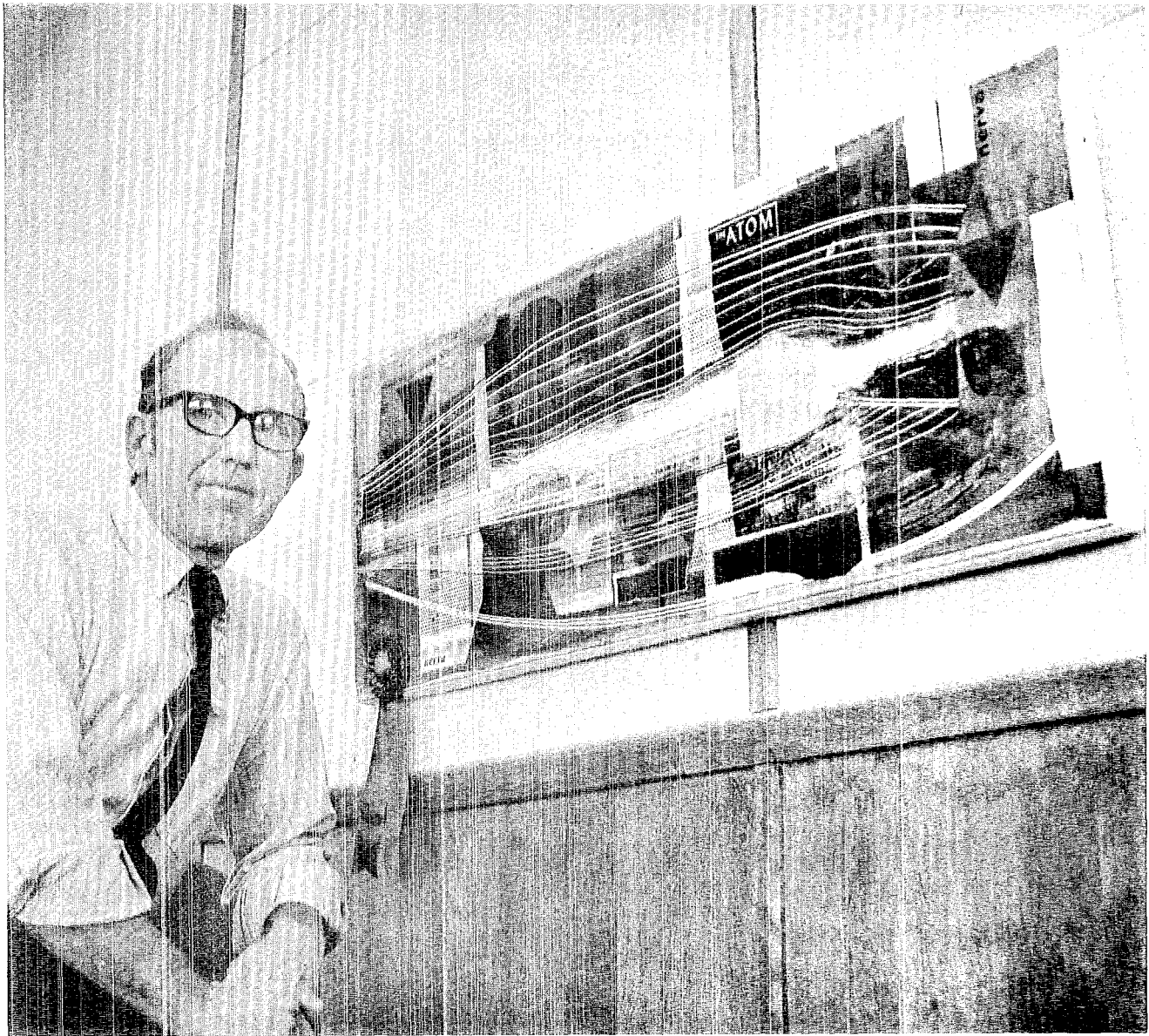
Jan. 14—Valle Canyon, Ken Ewing, 8-4488

Jan. 21—Cerro Grande, Terry Gibbs, 8-4909

Jan. 28—St. 4 to Apache Springs, Dib-bon Hagar, 2-6209

NEWCOMERS CLUB: Dinner and installation of officers, Jan. 22, 6:30 p.m., Los Alamos Golf Club.

RIO GRANDE RIVER RUNNERS: First meeting scheduled for noon, Jan. 14, at the South Mesa Cafeteria. Regular meetings will be at the same time and place on the second Tuesday of each month.



"NERVA," an acrylic collage by Hal Olsen, D-3 senior technical illustrator, won first prize in "NucleART '68," an exhibition for artists in the nuclear field, sponsored by the Atomic Industrial Forum and the American Nuclear Society, in conjunction with "AtomFair '68." Sixty-five artists submitted entries for the show which was held in Washington, D.C. Olsen had sold his intended entry, "Pom-mard," and put "NERVA" together in less than two days.

BACK COVER:

A Phoebus-1-type reactor pressure vessel has joined its predecessor, Kiwi A, on display in the Los Alamos Scientific Laboratory's Science Hall and Museum patio. Although LASL Rover reactors were not designed to fly, this one did with a slight assist from Zia riggers and crane which provided the lift for a short flight over the Museum roof and into the patio.

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